

Qualification Pack



Industrial Automation Specialist

QP Code: IAS/Q8005

Version: 6.0

NSQF Level: 5

Qualification Pack

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IAS/Q8005: Industrial Automation Specialist

Brief Job Description

The individual must have interdisciplinary aptitude, pay attention to details, does logical thinking and has ability to work within the factory and customer sites in a team environment and under deadlines.

Personal Attributes

Key attributes for Aircraft Powerplant Technician would include good communication skills, excellent written communication skills and good interpersonal skills with a keen eye for details.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [IAS/N2000: Design and Assemble Automation System](#)
2. [IAS/N2001: Technical Support for installation and commissioning of control panel](#)
3. [IAS/N2002: Coordination with Different Stakeholders](#)
4. [DGT/VSQ/N0102: Employability Skills \(60 Hours\)](#)
5. [IAS/N8013: Adaptation of IoT, IIoT and cloud technologies in Industrial Plants.](#)

Qualification Pack (QP) Parameters

Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Occupation	Product Engineering/System Design
Country	India
NSQF Level	5
Credits	19
Aligned to NCO/ISCO/ISIC Code	NCO-2015/ NIL

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Minimum Educational Qualification & Experience	10th Class (+ 3 Years Engineering diploma in relevant field) OR B.E./B.Tech (Completed 2nd Year Instrumentation/Mechanical/EEE/ECE/Mechatronics) OR Previous relevant Qualification of NSQF Level (4.5) with 1.5 years of experience Industrial Automation OR Previous relevant Qualification of NSQF Level (4) with 3 Years of experience Industrial Automation
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	NA
Next Review Date	07/10/2030
NSQF Approval Date	07/10/2025
Version	6.0
Reference code on NQR	QG-05-CG-045552025-V2-IASC
NQR Version	2.0

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IAS/N2000: Design and Assemble Automation System

Description

This OS unit is about capturing user requirements, designing the system and testing it to conform to the user specifications.

Scope

The scope covers the following :

- The systems include components of different types: electrical components, electronic assemblies, instrumentation and sensors electro-mechanical, pneumatic and hydraulic components, wiring, Control Panels, PLCs, SCADA, communication components and associated software. This unit/ task covers the following:
 1. Capturing the industry process
 2. Capturing user requirements and specifications
 3. Assist in deciding on deliverables and timelines
 4. Designing and developing control system application.
 5. Testing the system developed.
 6. Achieving quality and productivity standards

Elements and Performance Criteria

Capture the industry process

To be competent, the user/individual on the job must be able to:

- PC1.** Understand and capture the general value chain of the end user industry
- PC2.** Understand and capture the manufacturing process/system in the end user industry
- PC3.** Understand and capture the equipment used in different stages of the process
- PC4.** Understand and capture the critical stages in the process
- PC5.** Explain about the possible automation in the existing processes and global trends in automation

Capture user requirements and specifications

To be competent, the user/individual on the job must be able to:

- PC6.** Capture the client requirement at broad level from the proposal
- PC7.** Plan for a site visit to capture detailed requirements
- PC8.** Capture the process flow involved and the critical stages in the process during site visit
- PC9.** Deduce the safety aspect required in the critical stages of the process
- PC10.** Capture the industrial and infrastructure process involved and the integration requirement of the processes
- PC11.** Discuss with client and Capture the automation requirement in the control system
- PC12.** Capture the purpose for automation and explain to the user about the possible outcomes
- PC13.** Collect the details of the equipment installed or to be installed

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- PC14.** Collect the requirement specification if already prepared by the user and clarify on technical aspects
- PC15.** Suggest globally practised and accepted automation systems if the user is not aware of the technical specifications
- PC16.** Capture the sub systems that are involved in the process
- PC17.** Capture sensors and actuators requirement.
- PC18.** Collect information on process logic
- PC19.** Collect information for operator station screens
- PC20.** Probe the user by asking multiple questions to have clarity on the user requirement
- PC21.** Summarize the user requirement specifications and confirm with the client on their understanding

Assist in deciding on deliverables and timelines

To be competent, the user/individual on the job must be able to:

- PC22.** Decide on whether the system can be developed as per the user requirement
- PC23.** Support the project manager in calculating the time required for each stage to ensure completion of project
- PC24.** Assist in preparing the work plan with deliverables and timelines
- PC25.** Explain the expected output to the user

Design and develop control system application

To be competent, the user/individual on the job must be able to:

- PC26.** Develop control system application as per user requirement by following the standard operating procedure (SOP) of the organization
- PC27.** Apply approved engineering concepts, processes and principles in developing the control panel application
- PC28.** Use organization approved software (system and application software) to develop the system
- PC29.** Identify the requirement of indications, switchgears and accessories
- PC30.** Develop the control circuit drawing
- PC31.** Prepare general arrangement diagram
- PC32.** Prepare wiring plans
- PC33.** Integrate the main process system with the sub-systems as per the user requirement (e.g., using communication protocol)
- PC34.** Ensure that safety aspect of the process is captured in the design plan
- PC35.** Send the designed panel diagram for review to the customer
- PC36.** Ensure timely resolution of issues arising during the application development process
- PC37.** Elevate any issues as soon as identified to reporting manager
- PC38.** Get concurrence on function design specifications
- PC39.** Program PLC as per FDF
- PC40.** Program SCADA Application
- PC41.** PLC-SCADA Communication
- PC42.** Complete the application development and get approval of the application developed from the customer engineer
- PC43.** Calculate the number of days needed for commissioning of the panel at site

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PC44. Create backup copies of all designs developed for control panel and store in a secure location

PC45. Document the usage of product (product manual) and store them for future references

Test the system developed

To be competent, the user/individual on the job must be able to:

PC46. Locate field devices and their interface to PLC

PC47. Test the system in off line mode using simulator

PC48. Verify that the system conforms with all the user specifications during testing

PC49. Rework if there are any issues found and fix them

PC50. Test for integration of main system with the sub-systems (if applicable)

PC51. Send the test report for review to the customer

PC52. Perform Factory Acceptance Test (FAT)

PC53. Perform site acceptance test plan

Achieve quality and productivity standards

To be competent, the user/individual on the job must be able to:

PC54. Ensure timely delivery of the control panel design as per agreed timeline

PC55. Ensure that total cost and man hours spent is as per the budget planned

PC56. Ensure compliance with relevant regulations, standards and codes of practices

PC57. Ensure compliance of the application with manufacturing requirements and process capabilities analysis of the organization

PC58. Ensure that the design conforms with normal safety standards

PC59. Develop reliable panels so that the system does not fail during the usage

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Companys code of conduct

KU2. Organization culture

KU3. Companys reporting structure

KU4. Companys documentation policy

KU5. Companys line of business and product offerings

KU6. Companys production policy

KU7. Departments involved with production

KU8. Quality and standards system followed in the company

KU9. Electrical, electronics and instrumentation

KU10. Basics of computers and human machine interface (HMI)

KU11. Standard operating procedure (SOP) of the organization for control panel development process

KU12. Basics of machine safety (including electrical) and normal safety processes

KU13. Quality, standards and guidelines to be followed during design development

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- KU14.** Control system module and technologies used in the automation process
- KU15.** PLC, DCS programming software
- KU16.** SCADA, HMI development software
- KU17.** Application software, installation and debugging
- KU18.** General arrangement drawing
- KU19.** Electrical load calculations
- KU20.** Piping and instrumentation diagram/drawing (P&ID)
- KU21.** Basics on industrial process involved (example: oil and gas, refinery, etc.) And the stages involved in the process
- KU22.** Basics on infrastructure process involved in the industry (example: water treatment plant, chilling units, etc.)
- KU23.** Safety aspects to be inbuilt in the control panel system as per the process requirement
- KU24.** Instrumentation used in the factory and its wiring concept
- KU25.** Electrical panel and wiring knowledge
- KU26.** Testing process and parameters involved in the testing
- KU27.** Electronics indicators, switchgears and panel accessories
- KU28.** Sources and methods for obtaining required technical information for the control panel being developed
- KU29.** IEC standards
- KU30.** Relevant regulations, standards and codes of practice and their implications on the panel
- KU31.** How to communicate with shop floor technicians in order to resolve any discrepancies during commissioning
- KU32.** Basic power systems, motor fundamentals, drive system fundamentals
- KU33.** Relevant documents and documentation procedures used in the process

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** Compose e mails, letters and other official documents clearly
- GS2.** Write user requirements
- GS3.** Write technical specifications
- GS4.** Write test reports
- GS5.** Write technical documentation
- GS6.** Write schedules and timelines
- GS7.** Read user requirements
- GS8.** Read technical specifications
- GS9.** Read standards and regulatory compliance documents
- GS10.** Read schedules and timelines
- GS11.** Read drawings
- GS12.** Question customers appropriately in order to understand the application and the requirements

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- GS13.** Discuss task lists, schedules, and work-loads with co-workers
- GS14.** Give clear directions to customers
- GS15.** Keep customers informed about progress
- GS16.** Avoid using jargon, slang or acronyms when communicating with a customer
- GS17.** Question customers appropriately in order to understand the nature of the problem and make a diagnosis
- GS18.** Report issues and problems to managers in clear terms
- GS19.** Make decisions pertaining to the scope of work
- GS20.** Make decisions pertaining to the appropriate solution to customer problem
- GS21.** Make decisions pertaining to readiness of the system for supply
- GS22.** Make decisions pertaining to readiness of customer site for installation
- GS23.** Make decisions pertaining to work around for a problem
- GS24.** Plan and organize project - including requirements, design and integration, testing, installation and commissioning, Customer Acceptance Test and customer feedback
- GS25.** Anticipate issues and have alternate strategy
- GS26.** Understand real needs of the customer and suggest most appropriate solution
- GS27.** Support customer when they need help
- GS28.** Make customer happy and make them want to work with the company
- GS29.** Manage relationships with customers who may be stressed, frustrated, confused, or angry
- GS30.** Build customer relationships and rapport which promotes two way business
- GS31.** Think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)
- GS32.** Deal with clients lacking the technical background to solve the problem on their behalf
- GS33.** Identify immediate or temporary solutions to resolve delays - and implement the proper solution when possible
- GS34.** Use the existing information to arrive at actionable decision points
- GS35.** Use the existing information for improving the customer satisfaction
- GS36.** Use the existing information to optimize solution and company business
- GS37.** Analyze problems and identify causes and possible solutions
- GS38.** Apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action
- GS39.** Anticipate problems, risks and opportunities and utilize these for mitigation and business optimization

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Capture the industry process</i>	7	10	-	-
PC1. Understand and capture the general value chain of the end user industry	1	2	-	-
PC2. Understand and capture the manufacturing process/system in the end user industry	2	2	-	-
PC3. Understand and capture the equipment used in different stages of the process	1	2	-	-
PC4. Understand and capture the critical stages in the process	1	2	-	-
PC5. Explain about the possible automation in the existing processes and global trends in automation	2	2	-	-
<i>Capture user requirements and specifications</i>	28	47	-	-
PC6. Capture the client requirement at broad level from the proposal	2	2	-	-
PC7. Plan for a site visit to capture detailed requirements	1	2	-	-
PC8. Capture the process flow involved and the critical stages in the process during site visit	1	3	-	-
PC9. Deduce the safety aspect required in the critical stages of the process	2	2	-	-
PC10. Capture the industrial and infrastructure process involved and the integration requirement of the processes	2	2	-	-
PC11. Discuss with client and Capture the automation requirement in the control system	2	3	-	-
PC12. Capture the purpose for automation and explain to the user about the possible outcomes	2	3	-	-
PC13. Collect the details of the equipment installed or to be installed	1	3	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. Collect the requirement specification if already prepared by the user and clarify on technical aspects	1	3	-	-
PC15. Suggest globally practised and accepted automation systems if the user is not aware of the technical specifications	1	3	-	-
PC16. Capture the sub systems that are involved in the process	1	3	-	-
PC17. Capture sensors and actuators requirement.	2	3	-	-
PC18. Collect information on process logic	2	3	-	-
PC19. Collect information for operator station screens	2	3	-	-
PC20. Probe the user by asking multiple questions to have clarity on the user requirement	2	3	-	-
PC21. Summarize the user requirement specifications and confirm with the client on their understanding	4	6	-	-
<i>Assist in deciding on deliverables and timelines</i>	5	10	-	-
PC22. Decide on whether the system can be developed as per the user requirement	2	3	-	-
PC23. Support the project manager in calculating the time required for each stage to ensure completion of project	1	3	-	-
PC24. Assist in preparing the work plan with deliverables and timelines	1	1	-	-
PC25. Explain the expected output to the user	1	3	-	-
<i>Design and develop control system application</i>	50	77	-	-
PC26. Develop control system application as per user requirement by following the standard operating procedure (SOP) of the organization	2	3	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC27. Apply approved engineering concepts, processes and principles in developing the control panel application	2	3	-	-
PC28. Use organization approved software (system and application software) to develop the system	1	3	-	-
PC29. Identify the requirement of indications, switchgears and accessories	2	3	-	-
PC30. Develop the control circuit drawing	4	6	-	-
PC31. Prepare general arrangement diagram	2	3	-	-
PC32. Prepare wiring plans	2	3	-	-
PC33. Integrate the main process system with the sub-systems as per the user requirement (e.g., using communication protocol)	2	3	-	-
PC34. Ensure that safety aspect of the process is captured in the design plan	2	3	-	-
PC35. Send the designed panel diagram for review to the customer	2	2	-	-
PC36. Ensure timely resolution of issues arising during the application development process	1	3	-	-
PC37. Elevate any issues as soon as identified to reporting manager	1	2	-	-
PC38. Get concurrence on function design specifications	1	1	-	-
PC39. Program PLC as per FDF	4	6	-	-
PC40. Program SCADA Application	4	6	-	-
PC41. PLC-SCADA Communication	4	6	-	-
PC42. Complete the application development and get approval of the application developed from the customer engineer	4	6	-	-
PC43. Calculate the number of days needed for commissioning of the panel at site	4	6	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC44. Create backup copies of all designs developed for control panel and store in a secure location	4	6	-	-
PC45. Document the usage of product (product manual) and store them for future references	2	3	-	-
<i>Test the system developed</i>	14	20	-	-
PC46. Locate field devices and their interface to PLC	4	6	-	-
PC47. Test the system in off line mode using simulator	1	2	-	-
PC48. Verify that the system conforms with all the user specifications during testing	2	2	-	-
PC49. Rework if there are any issues found and fix them	1	2	-	-
PC50. Test for integration of main system with the sub-systems (if applicable)	1	3	-	-
PC51. Send the test report for review to the customer	1	2	-	-
PC52. Perform Factory Acceptance Test (FAT)	2	2	-	-
PC53. Perform site acceptance test plan	2	1	-	-
<i>Achieve quality and productivity standards</i>	11	21	-	-
PC54. Ensure timely delivery of the control panel design as per agreed timeline	1	3	-	-
PC55. Ensure that total cost and man hours spent is as per the budget planned	1	3	-	-
PC56. Ensure compliance with relevant regulations, standards and codes of practices	1	3	-	-
PC57. Ensure compliance of the application with manufacturing requirements and process capabilities analysis of the organization	4	6	-	-
PC58. Ensure that the design conforms with normal safety standards	2	3	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC59. Develop reliable panels so that the system does not fail during the usage	2	3	-	-
NOS Total	115	185	-	-

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National Occupational Standards (NOS) Parameters

NOS Code	IAS/N2000
NOS Name	Design and Assemble Automation System
Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Occupation	Product Engineering/System Design
NSQF Level	5
Credits	5
Version	3.0
Last Reviewed Date	07/10/2025
Next Review Date	07/10/2030
NSQC Clearance Date	07/10/2025

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IAS/N2001: Technical Support for installation and commissioning of control panel

Description

This OS unit is about providing Technical Support for commissioning and installing the control panel at the project site identified and ensuring its integration with the customer system and proper operation

Scope

The scope covers the following :

- This unit/ task covers the following: Capturing work requirement Providing Technical Support for installation and commissioning Rectifying identified errors Achieving productivity, quality and safety standards as per company's norms

Elements and Performance Criteria

Capture work requirement

To be competent, the user/individual on the job must be able to:

- PC1.** Interact with the customer in order to understand and capture the site requirements, readiness and commissioning time schedule
- PC2.** Plan the commissioning activities in consultation with the installation and commissioning team, based on customers requirements
- PC3.** Understand the design drawing and clarify doubts/issues before going to the site
- PC4.** Use prescribed drawings, job instructions or work manuals
- PC5.** Check availability of panel and tools required for installation
- PC6.** Check availability of resources at customer site

Provide Technical Support for Installation and Commissioning

To be competent, the user/individual on the job must be able to:

- PC7.** Ensure adequacy of working space, access and maintenance facilities at the site
- PC8.** Supervise technicians to visually check the internal panel wiring and ensure that it is in accordance with the design drawing
- PC9.** Carry out insulation check of internal panel wiring and devices within the panel
- PC10.** Ensure that all devices in the panel are dirt free and the packaging has been completely removed
- PC11.** Check if batteries and chargers have been assembled in accordance with the manufacturers recommended procedures
- PC12.** Prepare the work sites test report and document for future use
- PC13.** Ensure required tools for technicians to carry out the commissioning process
- PC14.** Identify the conductors size and capacity for installation
- PC15.** Ensure that the panel is positioned as prescribed, following safety norms
- PC16.** Supervise technicians to connect with attention to socket outlets, switches and protective conductors

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- PC17.** Perform settings as per customer requirements on the equipment in each of the panels
- PC18.** Test all control system interlocks
- PC19.** Check each digital control point by comparing the command at the control panel and status of the device that it controls
- PC20.** Ensure that fuses, switches and other protective devices are labelled correctly
- PC21.** Instruct to follow grounding and earthing procedures while commissioning
- PC22.** Instruct to put up danger and warning notices, if necessary
- PC23.** Ensure to follow company approved standard procedures by technicians in erection and commissioning process
- PC24.** Test continuity, insulation resistance, functions of all devices, etc., after completion of installation
- PC25.** Assist technicians for commissioning control panel
- PC26.** Assist the customer in any tests to carry out on the installed panel
- PC27.** Use the wiring diagram accurately to meet the specifications
- PC28.** Ensure that applicable local electrical codes and standards are use

Rectify identified errors

To be competent, the user/individual on the job must be able to:

- PC29.** Give technical support immediately to the technicians to rectify any errors identified
- PC30.** Report defective material or inadequate numbers to seniors
- PC31.** Check the physical condition of the instruments
- PC32.** Report about inadequate quantity of consumables such as connectors, screws, nuts, etc.

Achieve productivity, quality and safety standards as per company norms

To be competent, the user/individual on the job must be able to:

- PC33.** Achieve 100% work schedule as planned for the week
- PC34.** Meet 100% daily or monthly target
- PC35.** Achieve zero errors in commissioning as per company policy
- PC36.** Achieve zero component damage
- PC37.** Keep work area clean and organized
- PC38.** Identify problems and alert in time
- PC39.** Achieve 100% compliance with health and safety guidelines and rules

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** Company's policies on: incentives, delivery standards and personnel management, customer management
- KU2.** Reporting and documentation processes
- KU3.** Importance of the individual's role in the workflow
- KU4.** Reporting structure
- KU5.** Electrical, electronics and instrumentation
- KU6.** Electro-mechanical assembly and wiring instructions

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- KU7.** General principles of wiring and assembly
- KU8.** Generation, transmission and distribution principles of electricity
- KU9.** Automation and electro mechanical control systems
- KU10.** Operation of PLCs, relays, contactors, circuit breakers, solenoids, actuators, controllers etc.
- KU11.** Motors, generators, starters and their controls
- KU12.** Safety norms in handling electrical/electronic components and electrostatic discharge
- KU13.** Customer safety requirements and other applicable safety standards
- KU14.** Fundamentals of electricity such as Ohms law, difference between AC and DC, series and parallel connections
- KU15.** Specific safety precautions while working in an electronic assembly unit
- KU16.** Protective gear such as helmets, goggles, gloves, rubber shoes, etc.
- KU17.** Selection and maintenance of various tools used during the installation process
- KU18.** Frequently occurring errors, causes and preventive measures

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** Compose e mails, letters and other official documents clearly
- GS2.** Write site requirements
- GS3.** Write acceptance test reports
- GS4.** Write / modify technical documentation
- GS5.** Write schedules and timelines
- GS6.** Write issues, problems and resolutions
- GS7.** Read user requirements
- GS8.** Read technical specifications
- GS9.** Read standards and regulatory compliance documents
- GS10.** Read schedules and timelines
- GS11.** Read drawings
- GS12.** Question customers in order to understand the site requirements and readiness
- GS13.** Discuss task lists, schedules, and work-loads with co-workers
- GS14.** Give clear directions to customers
- GS15.** Keep customers informed about progress
- GS16.** Avoid using jargon, slang or acronyms when communicating with a customer
- GS17.** Question customers appropriately in order to understand the nature of the problem and make a diagnosis
- GS18.** Report issues and problems to managers in clear terms
- GS19.** Make decisions pertaining to the scope of work
- GS20.** Make decisions pertaining to the appropriate solution to customer problem
- GS21.** Make decisions pertaining to readiness of the system for supply
- GS22.** Make decisions pertaining to readiness of customer site for installation

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- GS23.** Make decisions pertaining to work around for a problem
- GS24.** Plan and organize installation and commissioning, Customer Acceptance Test and customer feedback
- GS25.** Anticipate issues and have alternate strategy
- GS26.** Understand real needs of the customer and suggest most appropriate solution
- GS27.** Support customer when they need help
- GS28.** Make customer happy and make them want to work with the company
- GS29.** Manage relationships with customers who may be stressed, frustrated, confused, or angry
- GS30.** Build customer relationships and rapport which promotes two way business
- GS31.** Think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)
- GS32.** Deal with clients lacking the technical background to solve the problem on their behalf
- GS33.** Identify immediate or temporary solutions to resolve delays - and implement the proper solution when possible
- GS34.** Use the existing information to arrive at actionable decision points
- GS35.** Use the existing information for improving the customer satisfaction
- GS36.** Use the existing information to optimize solution and company business
- GS37.** Analyze problems and identify causes and possible solutions
- GS38.** Apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action
- GS39.** Anticipate problems, risks and opportunities and utilize these for mitigation and business optimization

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Capture work requirement</i>	10	12	-	-
PC1. Interact with the customer in order to understand and capture the site requirements, readiness and commissioning time schedule	2	3	-	-
PC2. Plan the commissioning activities in consultation with the installation and commissioning team, based on customers requirements	2	2	-	-
PC3. Understand the design drawing and clarify doubts/issues before going to the site	2	3	-	-
PC4. Use prescribed drawings, job instructions or work manuals	2	2	-	-
PC5. Check availability of panel and tools required for installation	1	1	-	-
PC6. Check availability of resources at customer site	1	1	-	-
<i>Provide Technical Support for Installation and Commissioning</i>	41	91	-	-
PC7. Ensure adequacy of working space, access and maintenance facilities at the site	4	6	-	-
PC8. Supervise technicians to visually check the internal panel wiring and ensure that it is in accordance with the design drawing	1	4	-	-
PC9. Carry out insulation check of internal panel wiring and devices within the panel	1	2	-	-
PC10. Ensure that all devices in the panel are dirt free and the packaging has been completely removed	2	3	-	-
PC11. Check if batteries and chargers have been assembled in accordance with the manufacturers recommended procedures	1	4	-	-
PC12. Prepare the work sites test report and document for future use	1	2	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. Ensure required tools for technicians to carry out the commissioning process	2	3	-	-
PC14. Identify the conductors size and capacity for installation	1	1	-	-
PC15. Ensure that the panel is positioned as prescribed, following safety norms	1	3	-	-
PC16. Supervise technicians to connect with attention to socket outlets, switches and protective conductors	1	4	-	-
PC17. Perform settings as per customer requirements on the equipment in each of the panels	3	7	-	-
PC18. Test all control system interlocks	4	6	-	-
PC19. Check each digital control point by comparing the command at the control panel and status of the device that it controls	1	4	-	-
PC20. Ensure that fuses, switches and other protective devices are labelled correctly	1	2	-	-
PC21. Instruct to follow grounding and earthing procedures while commissioning	1	1	-	-
PC22. Instruct to put up danger and warning notices, if necessary	1	4	-	-
PC23. Ensure to follow company approved standard procedures by technicians in erection and commissioning process	3	7	-	-
PC24. Test continuity, insulation resistance, functions of all devices, etc., after completion of installation	2	3	-	-
PC25. Assist technicians for commissioning control panel	3	7	-	-
PC26. Assist the customer in any tests to carry out on the installed panel	3	7	-	-
PC27. Use the wiring diagram accurately to meet the specifications	1	4	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC28. Ensure that applicable local electrical codes and standards are use	3	7	-	-
<i>Rectify identified errors</i>	6	16	-	-
PC29. Give technical support immediately to the technicians to rectify any errors identified	1	4	-	-
PC30. Report defective material or inadequate numbers to seniors	3	7	-	-
PC31. Check the physical condition of the instruments	1	2	-	-
PC32. Report about inadequate quantity of consumables such as connectors, screws, nuts, etc.	1	3	-	-
<i>Achieve productivity, quality and safety standards as per company norms</i>	8	16	-	-
PC33. Achieve 100% work schedule as planned for the week	1	2	-	-
PC34. Meet 100% daily or monthly target	1	2	-	-
PC35. Achieve zero errors in commissioning as per company policy	1	4	-	-
PC36. Achieve zero component damage	1	2	-	-
PC37. Keep work area clean and organized	1	2	-	-
PC38. Identify problems and alert in time	1	2	-	-
PC39. Achieve 100% compliance with health and safety guidelines and rules	2	2	-	-
NOS Total	65	135	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	IAS/N2001
NOS Name	Technical Support for installation and commissioning of control panel
Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Occupation	Product Engineering/System Design
NSQF Level	5
Credits	6
Version	3.0
Last Reviewed Date	07/10/2025
Next Review Date	07/10/2030
NSQC Clearance Date	07/10/2025

Qualification Pack

IAS/N2002: Coordination with Different Stakeholders

Description

This OS unit is about Coordination with stakeholders inside and outside the organization to achieve smooth workflow and customer satisfaction. The stakeholders are client teams and vendors and within the organization - sales, purchase, fabrication, testing, installation, support departments/groups, colleagues and seniors.

Scope

The scope covers the following :

- This unit/ task covers the following: Interacting with client teams to understand the needs Coordinating with the Sales team and Project Manager, if any, to have a clear understanding of scope, deliverables, cost, and timelines. Coordinating with other vendors involved in the client project and ensuring that the scopes and interfaces match Coordinating with other teams and departments in the organization such as Purchase, Mechanical, Hydraulic, Electrical, Electronic, Assembly, Testing, Support, and Software Coordinating with vendors and subcontractors selected for the fulfillment of the order Communicating with colleagues and supervisor for timely and quality execution

Elements and Performance Criteria

Interact with ClientTeams

To be competent, the user/individual on the job must be able to:

- PC1.** Listen to client stakeholders and understand their needs. Note conflicting needs of different stakeholders, if any.
- PC2.** Ask questions to clarify points and make sure that there are no significant unknowns about the requirements and the application
- PC3.** Identify different solution options that meet client needs and present these options to the client with pros and cons.
- PC4.** Get client preference for the solution
- PC5.** Enquire about other vendors involved in the project and ensure their scope and interfaces are compatible with the proposed solution
- PC6.** Develop detailed design of the solution, cost and time (in consultation with internal teams) and present this to the client stakeholders
- PC7.** Finalize ordering in coordination with the sales team
- PC8.** Finalize specifications of the User Acceptance test with the client
- PC9.** Prepare Project Plan and share with the client
- PC10.** Inform client about site requirements and ensure that it is understood and accepted
- PC11.** Coordinate with the client about site readiness
- PC12.** Coordinate installation and commissioning of the solution at site
- PC13.** Demonstrate the system performance at the site and get client report of acceptance

Qualification Pack

PC14. Maintain communication with the client about usability and other issues and provide timely resolution. Obtain feedback and ensure positive outlook

Coordinate with SalesTeam

To be competent, the user/individual on the job must be able to:

PC15. Understand the client account, the organization goals and high level needs of the client from the frontline sales team

PC16. Identify and meet important stakeholders in the client organization

PC17. Discuss different solution options that meet client needs with pros and cons

PC18. Provide the technical specifications and the cost/time estimates to the sales team to help them make client proposal

PC19. Assist the sales team to win the order, by making presentations and with supporting data and documentation

PC20. Study the purchase order in detail and make sure that this is in line with the proposal. Point out any discrepancies and resolve

PC21. Prepare Specifications and Project Plan and share with the sales team

PC22. Keep sales team informed about system performance at the site and client report of acceptance

PC23. Share client feedback and resolve issues if any

PC24. Coordinate with the sales team about service contract and AMC

Coordinate with other Teams and Departments in the Organization

To be competent, the user/individual on the job must be able to:

PC25. Communicate and Coordinate with the Project Manager or any other manager if required, per organization structure and practices

PC26. Prepare detailed BOQ and share with the Purchase department to facilitate procurement

PC27. Coordinate with the Purchase department to finalize vendors and subcontractors

PC28. Share Project Specifications and Project Plan and with the concerned departments/ groups in the organization Purchase, Fabrication, Assembly, Software Development / Programming / Testing and Documentation etc.

PC29. Share site requirements with the Installation & Commissioning (I&C) team

PC30. Receive parts and spares from stores

PC31. Deposit unused material / faulty material / tools to stores

PC32. Coordinate with the Integration and Testing team for the factory inspection by client, if specified in the order

PC33. Coordinate factory inspection by the client, and follow up rectifications of shortcomings, if any

PC34. Coordinate installation and commissioning of the system after receipt confirmed at site.

PC35. Coordinate with I&C team for system performance test at the site.

PC36. Coordinate with I&C team for the user training.

PC37. Share client feedback with all teams and resolve issues if any

Coordinate with Vendors and Subcontractors

To be competent, the user/individual on the job must be able to:

PC38. Explain the specifications, scope and timelines of the parts/services to vendors and subcontractors and ensure that they understand and accept

Qualification Pack

- PC39.** Guide / assist the vendors technically as required to ensure quality and timely delivery
- PC40.** Inspect vendor / subcontractor facilities to ensure that they have the right expertise, infrastructure and capacity to deliver
- PC41.** Prepare alternate plans in consultation with procurement department for outsourced work
- PC42.** Perform intermediate and pre-dispatch tests at vendor premises, if required.
- PC43.** Support vendors to deliver quality products and services in time.

Coordinate with Colleagues

To be competent, the user/individual on the job must be able to:

- PC44.** Have clearly defined responsibilities and backup plans for all team members
- PC45.** Share plans, deliverables and expectations with concerned team members
- PC46.** Have regular team meetings to share progress, issues and resolutions
- PC47.** Share and celebrate team success
- PC48.** Help new members to settle down and perform
- PC49.** Support team members in delivering performance
- PC50.** Resolve inter-personnel conflicts and achieve smooth workflow
- PC51.** Pass on customer complaints to colleagues in respective geographical area
- PC52.** Share knowledge and experience gained through every day work

Communicate with Supervisor / Manager

To be competent, the user/individual on the job must be able to:

- PC53.** Communicate and Coordinate with the Project Manager or any other manager if required, per organization structure and practices.
- PC54.** Report problems identified in the field
- PC55.** Escalate customer concerns that are not being handled properly in the field
- PC56.** Resolve personnel issues
- PC57.** Receive feedback on work standards and customer satisfaction
- PC58.** Communicate any potential hazards at a particular location
- PC59.** Deliver work of expected quality despite constraints
- PC60.** Provide feedback to seniors about a happy or dissatisfied customer

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** Company's policies on: incentives, delivery standards, and personnel management
- KU2.** Importance of the individual's role in the workflow
- KU3.** Reporting structure
- KU4.** How to communicate effectively using the organization specified tools and methods
- KU5.** How to build team coordination for installation, commissioning and customer support
- KU6.** To deliver product to next work process on time

Generic Skills (GS)

Qualification Pack

User/individual on the job needs to know how to:

- GS1.** Compose e mails, letters, memos, reminders, schedules and other team documents clearly
- GS2.** Share issues, problems and resolutions
- GS3.** Share knowledge and information with team mates
- GS4.** Read mails, messages, alerts, schedules and timelines
- GS5.** Read pictures, drawings, notes relating to site and teamwork
- GS6.** Question co-workers in order to understand the needs and issues
- GS7.** Discuss task lists, schedules, and work-loads with co-workers
- GS8.** Give clear directions and solutions to co-workers
- GS9.** Keep co-workers informed about progress
- GS10.** Report issues and problems to co-workers and managers in clear terms
- GS11.** Make decisions pertaining to role of self and co-workers, in line with company policies
- GS12.** Make decisions pertaining to the appropriate solution to customer problem in discussion with co-workers
- GS13.** Plan and organize installation and commissioning, Customer Acceptance Test and customer feedback involving co-workers
- GS14.** Discuss issues and have alternate strategy with co-workers
- GS15.** Discuss customer needs with co-workers and identify most appropriate solution
- GS16.** Discuss problems with co-workers, evaluate the possible solution(s) and arrive at optimum /best possible solution(s)
- GS17.** Discuss immediate or temporary solutions with co-workers to resolve delays
- GS18.** Discuss use the available information with co-workers to arrive at actionable decision points
- GS19.** Analyze problems in team and identify causes and possible solutions
- GS20.** Collaborate with co-workers to analyses , and evaluate the information gathered from collective observation, experience, reasoning, or communication, as a guide to teamwork

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Interact with ClientTeams</i>	26	40	-	-
PC1. Listen to client stakeholders and understand their needs. Note conflicting needs of different stakeholders, if any.	2	3	-	-
PC2. Ask questions to clarify points and make sure that there are no significant unknowns about the requirements and the application	2	3	-	-
PC3. Identify different solution options that meet client needs and present these options to the client with pros and cons.	4	4	-	-
PC4. Get client preference for the solution	1	2	-	-
PC5. Enquire about other vendors involved in the project and ensure their scope and interfaces are compatible with the proposed solution	1	2	-	-
PC6. Develop detailed design of the solution, cost and time (in consultation with internal teams) and present this to the client stakeholders	4	6	-	-
PC7. Finalize ordering in coordination with the sales team	1	2	-	-
PC8. Finalize specifications of the User Acceptance test with the client	2	3	-	-
PC9. Prepare Project Plan and share with the client	2	3	-	-
PC10. Inform client about site requirements and ensure that it is understood and accepted	1	2	-	-
PC11. Coordinate with the client about site readiness	2	3	-	-
PC12. Coordinate installation and commissioning of the solution at site	2	3	-	-
PC13. Demonstrate the system performance at the site and get client report of acceptance	1	2	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. Maintain communication with the client about usability and other issues and provide timely resolution. Obtain feedback and ensure positive outlook	1	2	-	-
<i>Coordinate with SalesTeam</i>	20	30	-	-
PC15. Understand the client account, the organization goals and high level needs of the client from the frontline sales team	2	3	-	-
PC16. Identify and meet important stakeholders in the client organization	1	2	-	-
PC17. Discuss different solution options that meet client needs with pros and cons	2	3	-	-
PC18. Provide the technical specifications and the cost/time estimates to the sales team to help them make client proposal	3	3	-	-
PC19. Assist the sales team to win the order, by making presentations and with supporting data and documentation	4	6	-	-
PC20. Study the purchase order in detail and make sure that this is in line with the proposal. Point out any discrepancies and resolve	2	3	-	-
PC21. Prepare Specifications and Project Plan and share with the sales team	1	2	-	-
PC22. Keep sales team informed about system performance at the site and client report of acceptance	1	2	-	-
PC23. Share client feedback and resolve issues if any	2	3	-	-
PC24. Coordinate with the sales team about service contract and AMC	2	3	-	-
<i>Coordinate with other Teams and Departments in the Organization</i>	23	37	-	-
PC25. Communicate and Coordinate with the Project Manager or any other manager if required, per organization structure and practices	2	3	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC26. Prepare detailed BOQ and share with the Purchase department to facilitate procurement	2	3	-	-
PC27. Coordinate with the Purchase department to finalize vendors and subcontractors	2	3	-	-
PC28. Share Project Specifications and Project Plan and with the concerned departments/ groups in the organization Purchase, Fabrication, Assembly, Software Development / Programming / Testing and Documentation etc.	2	4	-	-
PC29. Share site requirements with the Installation & Commissioning (I&C) team	1	2	-	-
PC30. Receive parts and spares from stores	1	2	-	-
PC31. Deposit unused material / faulty material / tools to stores	1	2	-	-
PC32. Coordinate with the Integration and Testing team for the factory inspection by client, if specified in the order	2	3	-	-
PC33. Coordinate factory inspection by the client, and follow up rectifications of shortcomings, if any	2	3	-	-
PC34. Coordinate installation and commissioning of the system after receipt confirmed at site.	2	3	-	-
PC35. Coordinate with I&C team for system performance test at the site.	2	3	-	-
PC36. Coordinate with I&C team for the user training.	2	3	-	-
PC37. Share client feedback with all teams and resolve issues if any	2	3	-	-
<i>Coordinate with Vendors and Subcontractors</i>	12	18	-	-
PC38. Explain the specifications, scope and timelines of the parts/services to vendors and subcontractors and ensure that they understand and accept	2	3	-	-
PC39. Guide / assist the vendors technically as required to ensure quality and timely delivery	2	3	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC40. Inspect vendor / subcontractor facilities to ensure that they have the right expertise, infrastructure and capacity to deliver	2	3	-	-
PC41. Prepare alternate plans in consultation with procurement department for outsourced work	2	3	-	-
PC42. Perform intermediate and pre-dispatch tests at vendor premises, if required.	2	3	-	-
PC43. Support vendors to deliver quality products and services in time.	2	3	-	-
<i>Coordinate with Colleagues</i>	15	24	-	-
PC44. Have clearly defined responsibilities and backup plans for all team members	2	3	-	-
PC45. Share plans, deliverables and expectations with concerned team members	2	3	-	-
PC46. Have regular team meetings to share progress, issues and resolutions	2	3	-	-
PC47. Share and celebrate team success	1	2	-	-
PC48. Help new members to settle down and perform	2	3	-	-
PC49. Support team members in delivering performance	1	2	-	-
PC50. Resolve inter-personnel conflicts and achieve smooth workflow	2	3	-	-
PC51. Pass on customer complaints to colleagues in respective geographical area	2	3	-	-
PC52. Share knowledge and experience gained through every day work	1	2	-	-
<i>Communicate with Supervisor / Manager</i>	16	24	-	-
PC53. Communicate and Coordinate with the Project Manager or any other manager if required, per organization structure and practices.	2	3	-	-
PC54. Report problems identified in the field	2	3	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC55. Escalate customer concerns that are not being handled properly in the field	2	3	-	-
PC56. Resolve personnel issues	2	3	-	-
PC57. Receive feedback on work standards and customer satisfaction	2	3	-	-
PC58. Communicate any potential hazards at a particular location	2	3	-	-
PC59. Deliver work of expected quality despite constraints	2	3	-	-
PC60. Provide feedback to seniors about a happy or dissatisfied customer	2	3	-	-
NOS Total	112	173	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	IAS/N2002
NOS Name	Coordination with Different Stakeholders
Sector	Instrumentation
Sub-Sector	Instrumentation & Automation
Occupation	Product Engineering/System Design
NSQF Level	5
Credits	3
Version	3.0
Last Reviewed Date	07/10/2025
Next Review Date	07/10/2030
NSQC Clearance Date	07/10/2025

Qualification Pack

DGT/VSQ/N0102: Employability Skills (60 Hours)

Description

This unit is about employability skills, Constitutional values, becoming a professional in the 21st Century, digital, financial, and legal literacy, diversity and Inclusion, English and communication skills, customer service, entrepreneurship, and apprenticeship, getting ready for jobs and career development.

Scope

The scope covers the following :

- Introduction to Employability Skills
- Constitutional values - Citizenship
- Becoming a Professional in the 21st Century
- Basic English Skills
- Career Development & Goal Setting
- Communication Skills
- Diversity & Inclusion
- Financial and Legal Literacy
- Essential Digital Skills
- Entrepreneurship
- Customer Service
- Getting ready for Apprenticeship & Jobs

Elements and Performance Criteria

Introduction to Employability Skills

To be competent, the user/individual on the job must be able to:

- PC1.** identify employability skills required for jobs in various industries
- PC2.** identify and explore learning and employability portals

Constitutional values - Citizenship

To be competent, the user/individual on the job must be able to:

- PC3.** recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.
- PC4.** follow environmentally sustainable practices

Becoming a Professional in the 21st Century

To be competent, the user/individual on the job must be able to:

- PC5.** recognize the significance of 21st Century Skills for employment
- PC6.** practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life

Basic English Skills

To be competent, the user/individual on the job must be able to:

Qualification Pack

- PC7.** use basic English for everyday conversation in different contexts, in person and over the telephone
- PC8.** read and understand routine information, notes, instructions, mails, letters etc. written in English
- PC9.** write short messages, notes, letters, e-mails etc. in English

Career Development & Goal Setting

To be competent, the user/individual on the job must be able to:

- PC10.** understand the difference between job and career
- PC11.** prepare a career development plan with short- and long-term goals, based on aptitude

Communication Skills

To be competent, the user/individual on the job must be able to:

- PC12.** follow verbal and non-verbal communication etiquette and active listening techniques in various settings
- PC13.** work collaboratively with others in a team

Diversity & Inclusion

To be competent, the user/individual on the job must be able to:

- PC14.** communicate and behave appropriately with all genders and PwD
- PC15.** escalate any issues related to sexual harassment at workplace according to POSH Act

Financial and Legal Literacy

To be competent, the user/individual on the job must be able to:

- PC16.** select financial institutions, products and services as per requirement
- PC17.** carry out offline and online financial transactions, safely and securely
- PC18.** identify common components of salary and compute income, expenses, taxes, investments etc
- PC19.** identify relevant rights and laws and use legal aids to fight against legal exploitation

Essential Digital Skills

To be competent, the user/individual on the job must be able to:

- PC20.** operate digital devices and carry out basic internet operations securely and safely
- PC21.** use e- mail and social media platforms and virtual collaboration tools to work effectively
- PC22.** use basic features of word processor, spreadsheets, and presentations

Entrepreneurship

To be competent, the user/individual on the job must be able to:

- PC23.** identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research
- PC24.** develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion
- PC25.** identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity

Customer Service

To be competent, the user/individual on the job must be able to:

- PC26.** identify different types of customers
- PC27.** identify and respond to customer requests and needs in a professional manner.

Qualification Pack

PC28. follow appropriate hygiene and grooming standards

Getting ready for apprenticeship & Jobs

To be competent, the user/individual on the job must be able to:

PC29. create a professional Curriculum vitae (Résumé)

PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively

PC31. apply to identified job openings using offline /online methods as per requirement

PC32. answer questions politely, with clarity and confidence, during recruitment and selection

PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. need for employability skills and different learning and employability related portals

KU2. various constitutional and personal values

KU3. different environmentally sustainable practices and their importance

KU4. Twenty first (21st) century skills and their importance

KU5. how to use English language for effective verbal (face to face and telephonic) and written communication in formal and informal set up

KU6. importance of career development and setting long- and short-term goals

KU7. about effective communication

KU8. POSH Act

KU9. Gender sensitivity and inclusivity

KU10. different types of financial institutes, products, and services

KU11. how to compute income and expenditure

KU12. importance of maintaining safety and security in offline and online financial transactions

KU13. different legal rights and laws

KU14. different types of digital devices and the procedure to operate them safely and securely

KU15. how to create and operate an e- mail account and use applications such as word processors, spreadsheets etc.

KU16. how to identify business opportunities

KU17. types and needs of customers

KU18. how to apply for a job and prepare for an interview

KU19. apprenticeship scheme and the process of registering on apprenticeship portal

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. read and write different types of documents/instructions/correspondence

GS2. communicate effectively using appropriate language in formal and informal settings

Qualification Pack

- GS3.** behave politely and appropriately with all
- GS4.** how to work in a virtual mode
- GS5.** perform calculations efficiently
- GS6.** solve problems effectively
- GS7.** pay attention to details
- GS8.** manage time efficiently
- GS9.** maintain hygiene and sanitization to avoid infection

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Introduction to Employability Skills</i>	1	1	-	-
PC1. identify employability skills required for jobs in various industries	-	-	-	-
PC2. identify and explore learning and employability portals	-	-	-	-
<i>Constitutional values - Citizenship</i>	1	1	-	-
PC3. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.	-	-	-	-
PC4. follow environmentally sustainable practices	-	-	-	-
<i>Becoming a Professional in the 21st Century</i>	2	4	-	-
PC5. recognize the significance of 21st Century Skills for employment	-	-	-	-
PC6. practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life	-	-	-	-
<i>Basic English Skills</i>	2	3	-	-
PC7. use basic English for everyday conversation in different contexts, in person and over the telephone	-	-	-	-
PC8. read and understand routine information, notes, instructions, mails, letters etc. written in English	-	-	-	-
PC9. write short messages, notes, letters, e-mails etc. in English	-	-	-	-
<i>Career Development & Goal Setting</i>	1	2	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. understand the difference between job and career	-	-	-	-
PC11. prepare a career development plan with short- and long-term goals, based on aptitude	-	-	-	-
<i>Communication Skills</i>	2	2	-	-
PC12. follow verbal and non-verbal communication etiquette and active listening techniques in various settings	-	-	-	-
PC13. work collaboratively with others in a team	-	-	-	-
<i>Diversity & Inclusion</i>	1	2	-	-
PC14. communicate and behave appropriately with all genders and PwD	-	-	-	-
PC15. escalate any issues related to sexual harassment at workplace according to POSH Act	-	-	-	-
<i>Financial and Legal Literacy</i>	2	3	-	-
PC16. select financial institutions, products and services as per requirement	-	-	-	-
PC17. carry out offline and online financial transactions, safely and securely	-	-	-	-
PC18. identify common components of salary and compute income, expenses, taxes, investments etc	-	-	-	-
PC19. identify relevant rights and laws and use legal aids to fight against legal exploitation	-	-	-	-
<i>Essential Digital Skills</i>	3	4	-	-
PC20. operate digital devices and carry out basic internet operations securely and safely	-	-	-	-
PC21. use e- mail and social media platforms and virtual collaboration tools to work effectively	-	-	-	-
PC22. use basic features of word processor, spreadsheets, and presentations	-	-	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Entrepreneurship</i>	2	3	-	-
PC23. identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research	-	-	-	-
PC24. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion	-	-	-	-
PC25. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity	-	-	-	-
<i>Customer Service</i>	1	2	-	-
PC26. identify different types of customers	-	-	-	-
PC27. identify and respond to customer requests and needs in a professional manner.	-	-	-	-
PC28. follow appropriate hygiene and grooming standards	-	-	-	-
<i>Getting ready for apprenticeship & Jobs</i>	2	3	-	-
PC29. create a professional Curriculum vitae (Résumé)	-	-	-	-
PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively	-	-	-	-
PC31. apply to identified job openings using offline /online methods as per requirement	-	-	-	-
PC32. answer questions politely, with clarity and confidence, during recruitment and selection	-	-	-	-
PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements	-	-	-	-
NOS Total	20	30	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	DGT/VSQ/N0102
NOS Name	Employability Skills (60 Hours)
Sector	Cross Sectoral
Sub-Sector	Professional Skills
Occupation	Employability
NSQF Level	4
Credits	2
Version	1.0
Last Reviewed Date	07/10/2025
Next Review Date	07/10/2030
NSQC Clearance Date	07/10/2025

Qualification Pack

IAS/N8013: Adaptation of IoT, IIoT and cloud technologies in Industrial Plants.

Description

This unit is about capturing critical plant parameters, efficiency improvements, requirements, and adopting digital tools for improvement of overall plant performance.

Scope

The scope covers the following :

- This system includes existing automation systems such as DCS, PLC, SCADA, Safety Instrumented Systems (SIS), VFD architecture, operation, engineering, and maintenance.

Elements and Performance Criteria

To be competent, the user/individual on the job must be able to:

- PC1.** Understand and capture industrial plant critical process and assets
- PC2.** Understand and capture existing automation system historian process data historians for insightful analysis.
- PC3.** Understand and capture the critical assets/equipment used in different stages of the process.
- PC4.** Explain about the possible automation in the existing processes and global trends in automation.
- PC5.** Capture the IoT/IIoT/Cloud infrastructure requirements process and the integration requirement of the processes.
- PC6.** Discuss with system integrators/process licensors and capture the advanced automation requirement in the existing control system.
- PC7.** Capture the purpose for advanced automation and explain to the management and other stakeholders about the possible outcomes.
- PC8.** Suggest globally practiced and accepted advanced automation systems specifications.
- PC9.** Suggest globally practiced and accepted advanced automation systems specifications.
- PC10.** Capture IoT,IIoT sensors and actuators requirements.
- PC11.** Summarize the technical requirement specifications and confirm with the system integrators/process licensors on their understanding.
- PC12.** Develop cloud-based control system application as per requirement by following the standard operating procedure (SOP) of the organization.
- PC13.** Use organization approved software (system and application software) to develop the cloud based insightful solutions
- PC14.** Integrate the main process system with the sub-systems as per the requirement (e.g., using communication protocol)
- PC15.** Ensure that safety aspect of the process
- PC16.** Configure DCS, PLC, SCADA, SIS, and VFD systems in your process plant automation.

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- PC17.** Establish communication interface with automation systems installed for process automation.
- PC18.** Ensure compliance with relevant regulations, standards and codes of practices.
- PC19.** Ensure compliance of the application with manufacturing requirements and process capabilities analysis of the organization.
- PC20.** Ensure that the design conforms with normal safety standards.
- PC21.** Configuration of industrial wired and wireless devices such as HART/Field Bus/Ethernet in existing automation system
- PC22.** Capture infrastructure requirements and benefits of industry 4.0 tools adoption in industrial plants.
- PC23.** Capture and purpose of Digital Twin Applications for process plant commissioning and training.
- PC24.** Understand and capture Operation technology (OT), information technology (IT) convergence benefits.
- PC25.** Understand and capture Industrial cyber security infrastructure requirements for safe and secure remote process plant proprietary data connectivity
- PC26.** capture the purpose of Industrial Process Plants Robotics Automation (RPA).

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** Basics on industrial process involved (example: oil and gas, refinery, etc.) And the stages involved in the process
- KU2.** Basics on infrastructure process involved in the industry (example: water treatment plant, chilling units, etc.)
- KU3.** Safety aspects to be inbuilt in the control system as per the process requirement
- KU4.** Instrumentation used in the factory and its wiring concept
- KU5.** Understanding of industrial process Plant unit operation and assets such as boiler, distillation, heat exchanger, compressor and turbine
- KU6.** Advanced PLC - overview, operation, programming & maintenance
- KU7.** Advanced DCS - overview, operation, engineering & maintenance
- KU8.** Advanced SCADA overview, applications, operation and graphic development
- KU9.** Advanced Safety Instrumented Systems (SIS)- overview, operation & maintenance
- KU10.** Advanced VFD - Overview, application, configuration & maintenance

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** Question system integrators/licensors appropriately in order to understand the application and the requirement
- GS2.** Report issues and problems to managers in clear terms
- GS3.** Make decisions pertaining to the scope of work

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- GS4.** Plan and organize project - including requirements, design and integration, testing, installation and commissioning
- GS5.** Understand real needs of the customer and suggest most appropriate solution
- GS6.** Think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)
- GS7.** Use the existing information to arrive at actionable decision points
- GS8.** Use the existing information to optimize solution and company business
- GS9.** Analyze problems and identify causes and possible solutions
- GS10.** Apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
	40	40	10	10
PC1. Understand and capture industrial plant critical process and assets	2	2	1	1
PC2. Understand and capture existing automation system historian process data historians for insightful analysis.	2	2	1	1
PC3. Understand and capture the critical assets/equipment used in different stages of the process.	2	2	1	1
PC4. Explain about the possible automation in the existing processes and global trends in automation.	2	2	1	1
PC5. Capture the IoT/IIoT/Cloud infrastructure requirements process and the integration requirement of the processes.	2	2	1	1
PC6. Discuss with system integrators/process licensors and capture the advanced automation requirement in the existing control system.	2	2	1	1
PC7. Capture the purpose for advanced automation and explain to the management and other stakeholders about the possible outcomes.	2	2	1	1
PC8. Suggest globally practiced and accepted advanced automation systems specifications.	2	2	1	1
PC9. Suggest globally practiced and accepted advanced automation systems specifications.	2	2	1	1
PC10. Capture IoT,IIoT sensors and actuators requirements.	2	2	1	1
PC11. Summarize the technical requirement specifications and confirm with the system integrators/process licensors on their understanding.	1	1	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. Develop cloud-based control system application as per requirement by following the standard operating procedure (SOP) of the organization.	1	1	-	-
PC13. Use organization approved software (system and application software) to develop the cloud based insightful solutions	1	1	-	-
PC14. Integrate the main process system with the sub-systems as per the requirement (e.g., using communication protocol)	1	1	-	-
PC15. Ensure that safety aspect of the process	2	2	-	-
PC16. Configure DCS, PLC, SCADA, SIS, and VFD systems in your process plant automation.	2	2	-	-
PC17. Establish communication interface with automation systems installed for process automation.	2	2	-	-
PC18. Ensure compliance with relevant regulations, standards and codes of practices.	2	2	-	-
PC19. Ensure compliance of the application with manufacturing requirements and process capabilities analysis of the organization.	1	1	-	-
PC20. Ensure that the design conforms with normal safety standards.	1	1	-	-
PC21. Configuration of industrial wired and wireless devices such as HART/Field Bus/Ethernet in existing automation system	1	1	-	-
PC22. Capture infrastructure requirements and benefits of industry 4.0 tools adoption in industrial plants.	1	1	-	-
PC23. Capture and purpose of Digital Twin Applications for process plant commissioning and training.	1	1	-	-
PC24. Understand and capture Operation technology (OT), information technology (IT) convergence benefits.	1	1	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC25. Understand and capture Industrial cyber security infrastructure requirements for safe and secure remote process plant proprietary data connectivity	1	1	-	-
PC26. capture the purpose of Industrial Process Plants Robotics Automation (RPA).	1	1	-	-
NOS Total	40	40	10	10

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	IAS/N8013
NOS Name	Adaptation of IoT, IIoT and cloud technologies in Industrial Plants.
Sector	Instrumentation
Sub-Sector	
Occupation	Product Engineering/System Design
NSQF Level	5.0
Credits	1
Version	1.0
Last Reviewed Date	07/10/2025
Next Review Date	07/10/2030
NSQF Clearance Date	07/10/2025

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.
5. In case of successfully passing only certain number of NOSs, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.
6. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack

Minimum Aggregate Passing % at QP Level : 70

Qualification Pack

(Please note: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
IAS/N2000.Design and Assemble Automation System	115	185	-	-	300	25
IAS/N2001.Technical Support for installation and commissioning of control panel	65	135	-	-	200	25
IAS/N2002.Coordination with Different Stakeholders	112	173	-	-	285	20
DGT/VSQ/N0102.Employability Skills (60 Hours)	20	30	0	0	50	20
IAS/N8013.Adaptation of IoT, IIoT and cloud technologies in Industrial Plants.	40	40	10	10	100	10
Total	352	563	10	10	935	100

Qualification Pack

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training

Qualification Pack

Glossary

Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.

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Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.
Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills/ Generic Skills (GS)	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.